UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

MEMORANDUM 5SMQA

DATE: December 20, 1988

SUBJECT: Review of the Quality Assurance Project Plan(QAPP) to Support the Scott Air Force Base(Illinois) Installation Restoration Program(IRP) Remedial Investigation/Feasibility Study

FROM: James Adams Jr, Chief
Quality Assurance Section

TO: William Franz, Chief ✓
Environmental Review Branch

ATTENTION: Kathleen Warren,
Environmental Review Branch

The Quality Assurance Branch has completed its review of the subject federal facility QAPP received on December 8, 1988(QAS Log-In # 793). The comments below are recommended to be incorporated into the ERB's letter of reply to the US Air Force.

One general comment may be stated at the onset concerns organization and content of the QAPP/Work Plan. Information pertaining to a single elememt is generally scattered among too many QAPP and/or Work Plan sections. Sections are either not referenced or information is missing/contradictory.

All comments are listed by the appropriate QAPP or referenced Work Plan (WP) section number.

TITLE/SIGNATURE PAGE.
This section should clearly indicate if the signatures are for "Approved by" or "Reviewed by" along with the date of the QAPP draft and individual dates approved or reviewed. In the case of USEPA Region V, these signatures may be "Reviewed by" due to the advisory nature of the USEPA's responsibility.

1.2 PROJECT DESCRIPTION.
a) This section should address the following subelements: Site Description, Site History, Target Compounds, Project Objectives, Sample Network & Rationale, and Project Schedule. Where appropriate, sections of the Work Plan may be referenced to avoid reiteration.

b) Target Compounds should be expanded in scope to include full organic and inorganic screening parameters(i.e. CLP RAS organics/inorganics). Most of the known information on this site is based upon the Records Survey conducted for the HARM scoring. Since there is essentially no analytical data to narrow the selection of analysis types, it is recommended that broad scan information be collected in this initial stage.

c) Project Objectives.
This section should have clearly distinct specific objectives, intended data usages, and data quality objectives(DQOs). The specific objectives may include information presented in section 1.2.1. The intended data usages should relate all data types to these specific objectives. DQOs as presented in section 1.4 do not address the level of quality.

d) Sample Network & Rationale.
This section will need to clearly address the rationale(why, location selection, and number of sampling points). Tables should summarize all sampling efforts breaking down general location(i.e. Landfill,FPTA #1), matrix(water, soil boring etc), analytical parameters/methods, number of field samples, duplicates, trip/field blanks, and total samples.

Diagrams of sampling locations may be referenced from the Work Plan.If exact locations are not known, discuss how they will be selected in the field(i.e. criteria for soil gas surveys).

1.3 PROJECT ORGANIZATION AND RESPONSIBILITY.

a) The overall management responsibilities must be discussed/defined. The USAF program managers/project officers must be included in the section and project organization chart.

b) The responsibilities of USEPA Region V will include review of the QAPP by the Environmental Review Branch and the Quality Assurance Section (Monitoring & Quality Assurance Branch/ESD). The auditing of field operations by USEPA Region V may be in error since the USAF would need to request USEPA to perform this function. It is recommended that external field and laboratory audits be included as responsibilities in this QAPP.

1.4 QUALITY ASSURANCE OBJECTIVES....

a) The QA objectives should not be the DQOs itself but the means to measure if DQOs are being met. Precision, accuracy, representativeness, comparability, and completeness will include QC acceptance criteria which need to be met which in turn will be major factors in reviewing DQOs.

b) The section frequently alludes to "CLP requirements"(i.e. section 1.4.2) while no CLP analytical protocols are included in this QAPP. Many of the referenced protocols are apparently based upon SW-846. QC acceptance criteria for precision and accuracy must be consistent with the methods' capability and the site DQOs. In many cases, the CLP RAS QC acceptance limits may not be applicable or appropriate for the referenced analytical methods.

c) Representativeness as described(Table 2) may not be measured through relative percent difference(RPD) of field duplicate results. Representativeness should measure whether the location and number of sampling points truly characterize a site. Field duplicate analyses is a measure of field sampling precision at a particular sampling point.

d) Completeness requirements of 100% may be unrealistic since this would indicate that all sampling points are critical and that valid data must be obtained for all analytical parameters at all points sampled. The QAPP appears to infer that not all samples are critical which would be in conflict with 100% completeness as well. The Stage 1 schedule does not include any provisions for resampling if less than required completeness is obtained.
e) Table 2 indicates that comparability will be accomplished using "standardized" methods. This should clearly indicate that the methods of sample collection/analysis will follow the referenced SOPs included in the QAPP.

1.5 SAMPLING PROCEDURES.

Much of the information on sampling is scattered between the QAPP (section 2) and Work Plan (section 5.0 & Attachment 2) sections and remains incomplete or contradictory. A separate Sampling & Analysis Plan which coherently addresses all sampling aspects would greatly benefit this QAPP due to the complexity of the number of sites, matrices, and analytical parameters encompassed. The following specific comments should be addressed:

a) Discuss how sampling locations will be selected using geophysical(Task 8) and soil gas(Task 9) survey data. WP 5.0 includes Figures 5-1 through 5-9 which appear to indicate pre-selected locations while grids for soil gas surveys are shown in Figures 5-10 through 5-14. This is inconsistent.

   The soil gas survey will only provide general screening information for volatile organics. This type of screening may miss locations with high concentrations of inorganics or semivolatile organics. This will need to be reconciled to collect adequate, representative data.

   More details of the geophysical surveys should be provided concerning how grids are established, how readings will be taken within grids, and depths which will be covered.
b) The rationale and ultimate purpose of background samples should be considered in earlier QAPP sections on Sample Network/Rationale. The description of what is a background sample must be translated into the Sampling Procedures. The background sample should be representative of the matrix(i.e. soil,water) but there must be some assurance that it includes "natural" contaminant levels(i.e. well below any levels of concern).
c) How will field duplicates and matrix spike/matrix spike duplicate samples be collected? Ditto for the preparation/collection of field/trip blanks.
d) The specific details of collection of each sample matrix from soil boring/well bailing to placement in sample bottle should be included. The QAPP sections on soil samples(2.4.2) and surface water/sediment sampling(2.4.4) provide no detail whatsoever. How many subsamples are collected? What depths? Composites and/or grab samples?
e) It is recommended that other physical characterization of soil borings be conducted(i.e. geological decsriptions, permeability) since this type of data can be collected from the borings. There is no indication that this type of data is known and may be useful for later remediation.

f) Decontamination techniques(QAPP 2.4.5) appear to be sketchy at best and probably inadequate to avoid cross-contamination. The General technique implies that decontamination ends with sovent rinse and then air dried. Such technique would leave residual contaminants for volatile analyses. Step-by-step "cookbook" decontamination techniques should be included which will eliminate potential cross-contaminants for all target parameters.
g) What will be done to ensure that sample containers are free of contaminants prior to sampling? QAPP 2.4.6 does not discuss container preparation and QC checks/criteria on container lots.

1.6 SAMPLE CUSTODY.

i. What numbering system will be used to differentiate samples and to correlate samples with data entered in field logbooks?
ii. The contents of the final evidence file, sample custodian, and details of sample storage/disposal needs to be specified and detailed.

1.7 CALIBRATION PROCEDURES AND FREQUENCY.

1.7.1 Laboratory Calibration.

The referenced Laboratory QA Plan(Attachment 1) discussion of calibration is much too generic. It would be appropriate to include all analytical standard operating procedures as an attachment to the QAPP and reference the sections on calibration. Laboratory analytical SOPs should reflect the laboratory's "cookbook" for performing each analysis.The recommended elements of SOPs is included as Attachment 1 of this review.

1.7.2 Field Calibration.

Instrument operator manuals for all field equipment should be included along with any supplementary calibration procedures in SOP form as QAPP attachments. SOPs are particularly pertinent to instruments which will be used to select sampling locations and well placements. It should be recognized that there are significant differences between using field GC equipment for Health & Safety purposes and for other uses such as location selection which impact RI/FS data.

1.8 ANALYTICAL PROCEDURES.

a) Analytical methods in the form of SOPs should be included and attached to the QAPP. The Table 5 listing of methods and their characterization as "officially approved EPA methods" is insufficent since the methods may either present options(i.e internal or external calibration) or require additional detail. Analytical SOPs written by the contractor laboratory should reflect all details of a particular analysis as the laboratory shall perform it. Data should be included to support all required detection limits as validated by the laboratory using the analytical SOP.
b) As inferred under comments for 1.2 Project Description, will the selected analytical parameters and associated detection limits be sufficent for potential ARARs for the site? For example, analyte lists may either be missing fractions or parameters(i.e. CLP RAS Target

Compound List semivolatiles, pesticide/PCBs, selected volatile compounds on CLP TCL list but not in SW-846 methods). Methods may include detection limits can be higher or lower than required. It must be carefully considered if all DQOs such as risk assessments may be completed using the stated analytes and detection limits.

c) There is no discussion of library searches of non-target volatile or semivolatile compounds(i.e. CLP RAS Tentatively Identified Compounds). This data may be of particular importance for unknown non-target compounds observed in volatile/semivolatile organic fractions. This information may be needed in later stages for either the Feasibility Study and/or Remedial Action.

1.9 DATA REPORTING,VALIDATION, AND REDUCTION.

a) Data reduction should provide additional detail of the laboratory procedures including methods used to reduce data, data transfer, records storage(i.e. archival of hard copy, magnetic tape storage of raw GC/MS data), how blank(method/field/trip) results are integrated into sample results etc. Data reduction is a laboratory function and not ERM's. Reduction is the process of taking raw, unprocessed data to form qualitative and quantitative results. ERM may validate, assess, and summarize but not reduce data as indicated.

b) Data validation should be addressed in this section not 1.13. The method to validate data is indicated to be performed in accordance with the "Functional Guidelines" documents. This may not be appropriate since all analytical methods appear to be based upon non-CLP methods. It may be necessary to include a copy of ERM's data validation SOP. It is recommended that this validation SOP be evaluated as an external audit of ERM.

c) Data reporting as referenced in section 1.4.3(characterized as Weston's "Level II data reports" may not be sufficent to perform a complete data validation or include all elements necessary to meet all DQOs. It is inferred that data will be of known, acceptable quality and the data package may need all elements similiar to a CLP RAS data package with associated chain-of-custody. The three types of available Weston data reports levels (see Attachment 1) may infer that the stated Level II report may be somewhat less than a CLP RAS data package/chain-of-custody. Full details of the package/C.O.C. should be included in the QAPP including copies of report forms.

1.10 INTERNAL QC.

1.10.2 Field Internal Quality Control Checks.

The samples collected/prepared to support the described QC checks were not but should be discussed in QAPP sections on Sample Network/Rationale and Sampling Procedures(Plan).

1.11 PERFORMANCE & SYSTEMS AUDITS.

a) This section addresses only internal field(by ERM) and laboratory (by Weston) audits. It is highly recommended that external audits be a function of Federal overview. Field operations should be audited for adherance to QAPP/Work Plan specifications. Laboratories should be audited through review of SOPs, satisfactory completion of performance

evaluation samples, on-site lab visits etc.
b) Acceptance criteria for internal/external audits should be discussed.
c) Specify which parties responsible for overall management will receive and review audit reports.

1.12 LABORATORY & FIELD MAINTENANCE.
1.12.2 Field Maintenance.
Maintenance SOPs should be available and attached for all field instrumentation. These may be a section of the instrument operator's manual.

1.13 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS....
a) Address how completeness will be calculated and reference QAPP section 1.4 for examples of precision/accuracy data which will be used for field/lab measurements.
b) Discuss how field duplicate data will be used and what limits will be applied for the associated relative percent difference(RPD).

1.14 CORRECTIVE ACTION.
This section should specify how all parties responsible for overall management(including the USAF) will be incorporated into corrective actions. It appears that corrective action will be conducted without prior notification of overall management. This may cause delays or additional cost to the goverment if notified after-the-fact.

1.15 QUALITY ASSURANCE REPORTS TO MANAGEMENT.
It should be clearly stated that all parties responsible for overall management will receive these reports. It is further recommended that if immediate corrective action is warranted, QA reports may be written as needed even if it more often than bimonthly.

cc: K. Bolger, QAS/ESD
C.-W. Tsai, QAS/ESD